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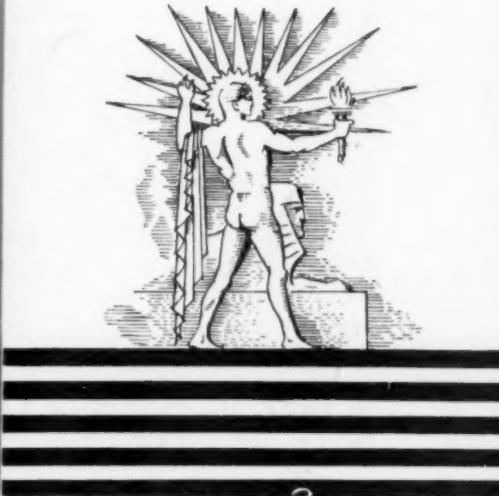
TECHNOLOGY DEPT.

SCIENCE NEWS LETTER



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DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



October 25, 1941

For Happy Landings

See Page 264



A SCIENCE SERVICE PUBLICATION

Do You Know?

Tests indicate that airplanes can be used to sow grass seed on rough land.

To deliver frozen foods to homes, one company has designed a special truck with sub-zero food compartments.

Greeks of Sybaris in the sixth century B. C. had a *patent* system: a cook who invented an unusual dish had a monopoly for a year.

Competent *truck drivers* are as scarce as aluminum, says a safety engineer, and for the same reason—metal and men are in defense work.

With possible exception of the tortoise, man probably has a longer *life expectancy* than any other animal known, says a government scientist.

A Shanghai firm claims to have the only process in use for *removing color* from silk threads in old stockings, and this process takes five months.

Gasoline service stations were recently surprised by a request for *free air for fish*, when a tank-truck of fish from the New York Aquarium was en route to Boston Aquarium and required fresh air in the tanks every two hours.

Mountain sheep, says a writer in the magazine *Fauna*, have good brakes: their long, narrow hooves are hollow cupped with sharp edges and near the heel is a pliable, rubbery substance that prevents skidding and provides quick stops.

SCIENCE NEWS LETTER

Vol. 40 OCTOBER 25, 1941 No. 17

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QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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ARCHAEOLOGY

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PUBLIC HEALTH

How extensive are the blood and plasma banks in England? p. 271.

What sort of vaccinations have been ordered for all Canadian Air Force personnel? p. 264.

The most contagious of all known diseases is the *common cold*.

About 20,000 Army and Navy aviators are being taught *Spanish* by WPA language teachers, stressing a 600 word vocabulary.

Discovering that the type of *sunshine* in a Michigan locality did not produce profitable sugar content in sugar beets, one company moved to Idaho where solar radiation was more favorable to this crop.

Switzerland is attempting to obtain oil for food and industrial purposes from *tobacco seed*.

Soviet Russia was building this year a *magnetic observatory* at the old city of Novgorod, for study of terrestrial magnetism.

Since *weather* is important to success of military missions, weather observers and forecasters are included in U. S. Army organization.

form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

The *Science Observer*, established by the American Institute of the City of New York, is now included in the SCIENCE NEWS LETTER.

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MEDICINE—PUBLIC HEALTH

Infantile Paralysis Carried By Flies, Study Indicates

Coupled With Recent Finding That Disease May Enter Through Digestive Tract, Points to Contaminated Food

FLIES were indicted as the villains that may be responsible for the spread of infantile paralysis in a report by Dr. John R. Paul and Dr. James D. Trask, of Yale University, at the meeting of the American Public Health Association in Atlantic City.

The case against flies has not yet been proved but the virus that causes infantile paralysis has been found on two occasions recently in flies caught in the open during infantile paralysis epidemics. In both instances the flies had the opportunity of feeding both inside and outside of privies on human excreta which may have contained the polio virus.

The virus has been found in sewage and in excreta from both infantile paralysis patients and healthy persons believed to be carriers of the disease. These findings plus the recent discoveries showing that the infantile paralysis virus may get into the body through the mouth and digestive tract have suggested that patients may get the disease from contaminated food or water. If flies can spread it, the way in which food becomes contaminated is easy to see.

The possible carrying of the virus by these insects would explain much about the baffling nature of this disease, the Yale investigators declared.

This is a problem which, in the opinion of the medical men, deserves grave consideration by sanitary engineers.

Science News Letter, October 25, 1941

Cancer Checked by Diet

CONTROL of cancer by diet may be possible in the future, Dr. Carl Voegtl, chief of the National Cancer Institute, announced.

The growth rate of certain cancers in animals can be strikingly slowed by keeping the animals on special diets, National Cancer Institute researchers have found. The diets in these studies were partly deficient in such essential compounds as vitamins or another group of chemicals, the amino acids which are building blocks of proteins. No specific diet for cancer patients has yet been

recommended by this group of cancer experts, but Dr. Voegtl declared that "the time may come when it will be possible to devise diets which will control the cancerous growth in patients."

Cancer research, he said, is on the verge of discoveries comparable to the discoveries that started thirty-five years ago of the vitamins as cures and preventives of nutritional diseases, such as pellagra, beriberi and rickets.

Science News Letter, October 25, 1941

Test Toluene Drunkenness

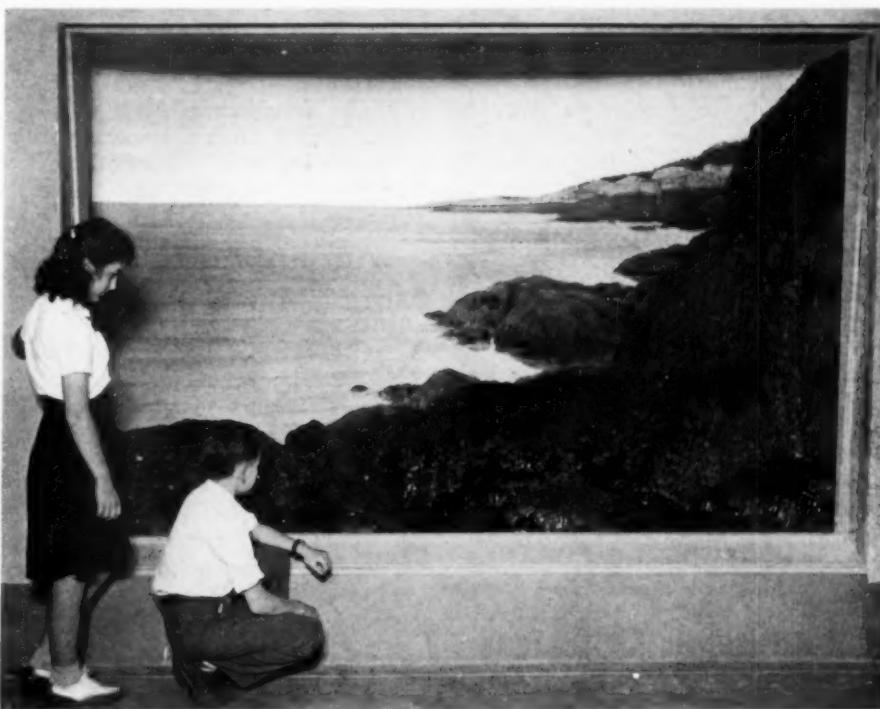
DANGER of defense industry workers getting toluene drunk from inhaling the fumes in their work and causing accidents costly both in manpower and materials may be prevented by a new test announced by Dr. Wolfgang F. Von Oettingen, Dr. Paul A. Neal and Dr.

Dennis D. Donahue, of the U. S. National Institute of Health, to the American Public Health Association.

Toluene poisoning, like alcoholic intoxication, reduces a man's powers of coordination and reaction time and even gives an exhilaration similar to that felt after taking two or three cocktails on an empty stomach, and finally puts him to sleep. The early stages of incoordination and slowed reaction time, which might be fatally dangerous for a man working in a TNT factory, are not recognized by the victim of the poisoning.

A chemical test which gives advance warning of the danger by showing how much toluene the worker is getting into his system has now been worked out by the federal health scientists. It consists in determining the amount of another chemical, hippuric acid, which is excreted. Along with this test the doctor can make a simple test of the worker's coordination, such as asking him to pick up and thread a needle. The victim of insidious toluene poisoning, though he may not appear to be an accident-prone worker, would have trouble even picking up the needle.

Exposure for eight hours to as little as two hundred parts per million of toluene produces definite impairment of coordination and reaction time, the federal scientists reported. Higher con-



MAINE IN MIDWEST

This little slice of the rocky North Atlantic shore near Lubec, Maine, has been transported in replica to Chicago by a new exhibit in the Field Museum of Natural History.

centrations, such as may occur under defense-increased industrial activities, may be damaging within three hours exposure. (See *SNL*, May 17)

Science News Letter, October 25, 1941

Quick Test For Influenza

THE CHANCE for protection against influenza has been greatly improved by new developments reported by Dr. Frank L. Horsfall, Jr., of the Rockefeller Institute for Medical Research to the American Public Health Association.

Sure-fire protection by vaccination against even one of the three or more strains of influenza-causing viruses is "very improbable," Dr. Horsfall declared.

Combination of a new, quick test for susceptibility or resistance to influenza plus a potent vaccine against the A type influenza virus, however, seems to offer a chance of reducing the number of cases of this type of influenza.

The test was developed by Dr. G. K. Hirst, of the Rockefeller Foundation. It is a simple, quick blood test which depends on the fact that allantoic fluid of chick embryos infected with influenza virus will clump red blood cells together.

When an epidemic threatens, it might be possible by this test to pick out those whose resistance to influenza is below normal and then vaccinate them with the vaccine developed by Dr. Horsfall and associates. This vaccine, in tests during the influenza epidemic last winter, reduced the number of cases in six institutions to fifty per cent. of the number among unvaccinated persons in the same institutions.

The vaccine, even if it could be made more potent, is not likely to give one hundred per cent. protection, Dr. Horsfall pointed out. What it does is to bring the influenza-fighting antibodies in a susceptible person's blood up to, but no higher than, the level in a normal person's blood. The level of these antibodies is related to the degree of resistance to the disease, but even a person with a high level of antibodies sometimes gets influenza. That is why the vaccination is not expected to give complete protection.

Science News Letter, October 25, 1941

Self-Antiseptic Clothing

CLOTHING with self-antiseptic properties provides a new approach to protecting personal health and avoiding offensive body odors, Dr. L. H. James, of the University of Maryland, declared

before the American Public Health Association.

Such clothing is made from specially treated fabrics which kill germs that get into them. Since body odors are due to bacterial growth and decomposition of organic matter contained in perspiration or other secretions, the treated fabrics remain free from offensive odors.

Infections are less likely to develop in skin cuts when such clothing is worn. People with athlete's foot are less likely to reinfect themselves if they wear shoes lined with self-antiseptic fabric. Chances of getting skin or scalp infection from hats, girdles or underwear that others have tried on before you bought them are reduced.

Self-antiseptic clothing keeps itself free of germs but it does not kill the germs on your skin the way medicated bandages do. If it had strong enough antiseptic power to do this, Dr. James warned, it would irritate and injure the skin in the course of repeated contact.

Practically all leather hat bands are now made of self-antiseptic material. Some 15,000,000 mattresses, including those used by the Dionne quintuplets, are made of treated fabrics. More than 2,000,000 pairs of self-antiseptic canvas shoes were made last year and over 4,000,000,000 pieces of personal contact laundry, such as sheets, pillowslips, and night clothes, were treated, Dr. James said, citing these figures to show that self-antiseptic clothing is more than a fad.

Self-antiseptic sheets, nightgowns and the like for patients with smallpox, scarlet fever or other sicknesses in which germs are on the skin in great numbers, Dr. James pointed out, help to protect nurses and laundry workers.

Science News Letter, October 25, 1941

More Harm Than Good

MOUTHWASHES endowed with germ-killing power are likely to do more harm than good, it appears from studies by Dr. Henry Welch and Dr. Charles M. Brewer, of the U. S. Food and Drug Administration. They not only fail to kill germs but destroy the white blood cells which are part of the body's own germ-fighting forces.

Only 9 of 87 commercial mouthwashes tested were able to kill germs under the conditions of the test, but 62 of them were toxic in a one-to-five dilution. Some were toxic at much greater dilutions. By toxic is meant not life-destroying power but ability to destroy the germ fighters in the blood.

Science News Letter, October 25, 1941

Soldiers' Malaria Reduced

EFFECTIVE mosquito control measures, carried on in nearly 100 camps, posts and stations, have been a factor in reducing the malaria rate among troops in the United States to one-third of what it was during 1918, Col. W. A. Hardenbergh, Sanitary Corps, U. S. Army, reported.

In providing the necessary water supplies for the million and a half soldiers now in the Army, 11 modern filter plants have been built to serve major camps, and hundreds of deep wells have been sunk. In 42 major camps, modern sewage treatment plants were constructed to protect the health of the troops and of nearby civilian communities and to prevent nuisances.

Nearly 100 sanitary engineers, reserve officers of the Sanitary Corps, who are assigned to duty in the Surgeon General's office and to assist Medical officers in the field, have provided the technical skill required for these procedures.

Science News Letter, October 25, 1941

Priorities For Vitamins

DEFENSE priority ratings for materials needed in the commercial manufacture of two vitamins have been obtained so that no shortage in these strategic chemicals will occur, Dr. W. H. Sebrell, U. S. Public Health Service, announced to the American Public Health Association.

The two vitamins concerned are the morale vitamin B₁ and riboflavin. The latter is needed for protection against an eye disorder that may destroy vision. It is difficult to obtain an adequate supply of this vitamin from the diet unless plenty of milk is taken every day. Nutrition authorities therefore believe it would be advisable to add this vitamin to enriched bread and flour as soon as an adequate supply is available. Synthetic vitamin factories are now working to increase production of both riboflavin and thiamin, which is vitamin B₁. When large scale production is under way, Dr. Sebrell said, the addition of riboflavin, thiamin, and pellagra-preventing nicotinic acid to white flour and bread will cost no more than the addition of thiamin and iron does now.

Emphasizing the need for a better national diet for defense Dr. Sebrell cited a newspaper survey which showed that selective service rejections for medical and health defects in Chicago were about twice as great in the slum wards as in the well-to-do wards of the city.

Science News Letter, October 25, 1941

GENERAL SCIENCE

Defect In Body's Use of Fat May Cause Artery Hardening

Arteriosclerosis May Be Fat Disease in Same Way That Diabetes Is a Sugar Disease, Study Indicates

HARDENING of the arteries, technically termed arteriosclerosis, may be a fat disease in the way that diabetes is a sugar disease, it appears from studies reported by Dr. Lester R. Dragstedt, of the University of Chicago, to the National Academy of Sciences meeting in Madison, Wis.

The condition is not a necessary part of the aging process, Dr. Dragstedt said, since not all old people develop it.

When the pancreas fails to produce enough insulin, the utilization of sugar is defective and diabetes results. Failure of the pancreas to produce another hormone, called lipocaine, disturbs the utilization of fat and arteriosclerosis results. This is the case in dogs and maybe humans.

A high percentage of dogs developed arteriosclerosis when deprived of lipocaine by removal of the pancreas, Dr. Dragstedt found.

Hardening of the arteries occurs with abnormally high frequency in patients with diabetes, Dr. Dragstedt pointed out, and occurs not infrequently in young persons. Diets rich in fat are especially apt to produce the artery hardening in diabetics and, conversely, low fat diets have a protective effect.

Further experimental evidence for the theory of arteriosclerosis being a result of disturbed fat utilization was obtained by feeding rabbits an excessive amount of cholesterol. This fatlike chemical constitutes a large part of the most frequently occurring type of gallstones and occurs in the thickening in the artery walls in a certain type of arteriosclerosis. The rabbits fed the excessive amounts of cholesterol developed an artery hardening which resembled very closely the human disease.

Science News Letter, October 25, 1941

Hope For Noise Hardening

HOPE that blitzed populations and soldiers under fire may in future be trained to withstand the nerve-shattering effects of battle's din was seen in a report to the National Academy of Sci-

ences by Dr. Norman R. F. Maier, of the University of Michigan.

Dr. Maier's experiments, conducted with animals far from Europe's bursting bombs, nevertheless may contribute very directly to the lessening of war's horrors. Rats were used in his experiments because certain noises—the shrill blast of a whistle, the rush of compressed air or even the annoying jingle of keys—will throw rats into jitters, convulsions or fits, and even coma.

But with repeated exposure to the noise that causes this devastating effect, the rat adjusts himself and is less likely to go into a seizure, Dr. Maier told the Academicians. And leading up to the fit-producing noise with a less violent one will temporarily rob it of its damaging effect.

Shocks to the nervous system apart from the noise itself, can act to make an animal additionally sensitive to noise, however, Dr. Maier found.

Metrazol, the powerful drug used to shock the mentally ill back to sanity, when given in doses too small to produce its characteristic convulsions, will nevertheless make a rat which ordinarily can stand up to noise collapse under it.

The tendency to be hypersensitive to noise can be inherited, Dr. Maier said.
Science News Letter, October 25, 1941

Preventing Mental Old Age

THREE rules for fighting off oncoming mental old age were proposed before the National Academy of Sciences by Dr. George D. Stoddard, University of Iowa psychologist. They are:

1. Avoid bad health conditions—nutritional, endocrinial or infectious. Such conditions may retard children mentally but they bring adults to a full stop.

2. Avoid the mechanisms of escape from life and reality — retrospection and rigidity. These carry you back to more primitive intellectual patterns.

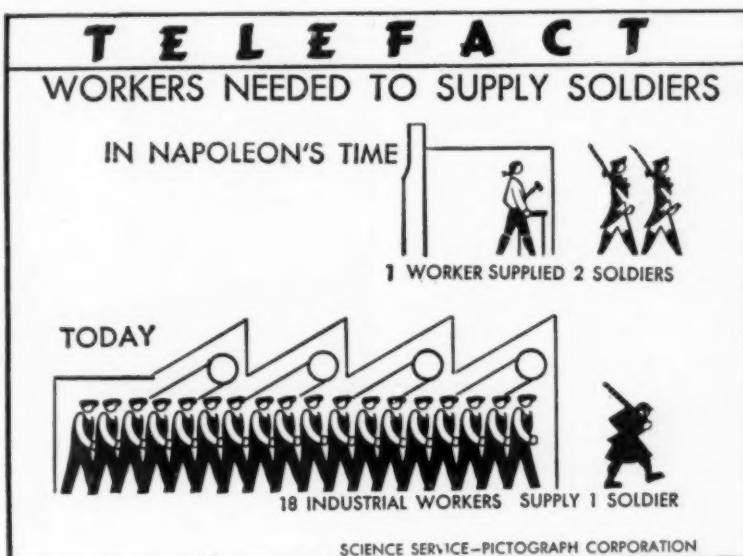
3. Avoid lack of mental exercise — failure to undertake new abstract learning which is as appropriate to adults as school and college are to the young.

You cannot know from any study of your heredity or your childhood development just what are the limits of your mental ability, but, by following these rules, you can fight off the forces of mental enfeeblement, Dr. Stoddard told the Academicians.

Study of records of adult achievement may fill the psychologist with hope or despair, depending, not on the objective data themselves, but upon his own temperament, Dr. Stoddard said.

"For some," he declared, "it is encouraging to note the existence of high scientific and artistic attainment in the sixth and seventh decades of life. What men have done, they may do again in intellectual as in other spheres."

Dr. Stoddard ex- (Turn to page 268)



GENERAL SCIENCE

Science for Everybody

Favorite Hobby Keeps Boys and Girls Willingly After School; Youngsters Up to 85 Grind Telescope Mirrors

By WATSON DAVIS
Director, Science Service

AMERICA is going in for club life in a big way these days.

It is not the kind of high, exclusive living that you read about in the society novels. It has been called "the most hopeful phenomenon in American life today"—the banding together of amateur scientists, young and old, into clubs to make telescopes, collect insects, take photographs, raise animals, breed fishes, make radio sets, and engage in hundreds of other scientific hobbies and activities.

For science clubs are the favorite evening hobby of many neighborhoods. Boys and girls willingly stay after school to work in science laboratories and perform their experiments, aided by teachers who sponsor such extra activities. Youngsters up to 85 may be found grinding telescope mirrors or charting the light of variable stars—or doing dozens of other scientific tasks for the fun of it.

Men who work in shops have their own groups that often pursue science subjects quite remote from their daily work.

Age or youth is no barrier to such useful activities. In fact, fathers and sons and mothers and daughters often become members of the same club on a plane of equality in interest and effort.

In Almost Every High School

In almost every one of America's 20,000 high schools there are one or more science clubs, some tackling science in general and some limiting themselves to some particular subject such as radio, or physics, or chemistry, or biology.

Unheralded in most localities, there are many thousands of informal science clubs organized among adults who often find working in science as an avocation more interesting than their regular work. In the Philadelphia area alone there are some 300 such clubs with about 30,000 members.

The science club movement has become more than merely national, for there are clubs in Central and South America and even across the oceans.

To bring all the many local activities together into an international organization, Science Clubs of America is being sponsored by Science Service from its headquarters in Washington. Various services, such as helpful literature, advice from experts, hints on what to do and how to do it, insignia, and many other things will be provided by the national organization working in cooperation with local newspapers.

The real front-line work of science clubs will be done in their own localities. One of the most promising features of the enlarged movement is that clubs of adults will be able to cooperate with youth clubs, and all the clubs of a region will have the chance to attend meetings, conferences and exhibitions.

About a thousand high school clubs in every part of the nation are already

formally enrolled, with new charters being granted every day. Some of these have been in existence for many years, organized with the cooperation of local scientific bodies, and some were affiliated with the American Institute of the City of New York, which is now devoting its major energies to the New York area, while Science Service handles the national organization.

Academies of Science Joining

National and state science organizations are joining in the movement, particularly the state academies of science.

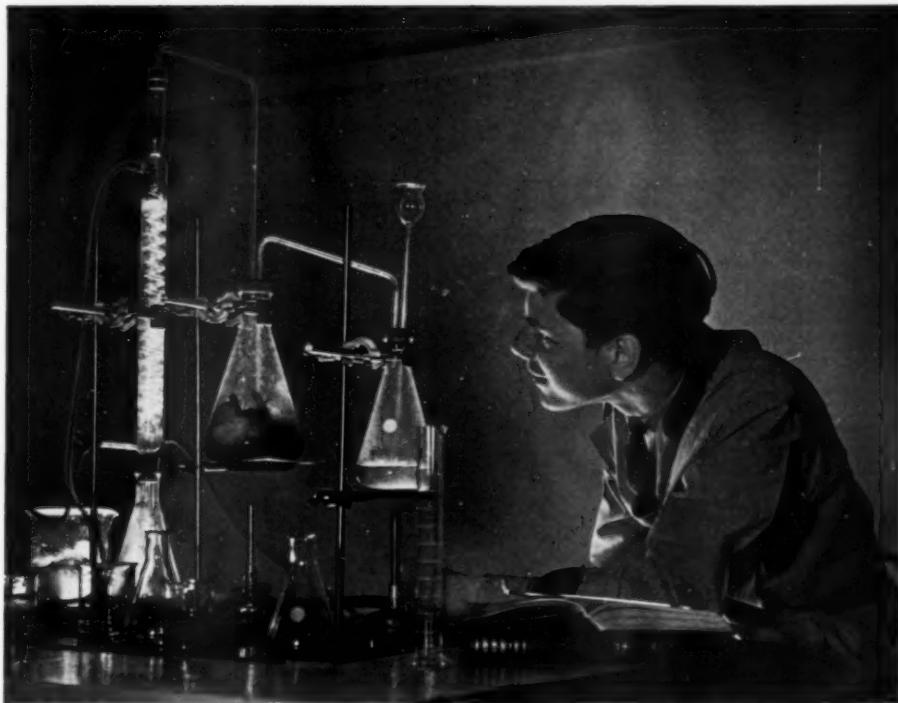
Museums, schools, libraries, industries, and newspapers are cooperating in various ways in making science clubs effective.

Hints on how to perform experiments and engage in science hobbies are published regularly in local newspapers and the SCIENCE NEWS LETTER. By bringing Science Service dispatches on discoveries and achievements in science to its readers



SKYSCRAPERS

That is the interesting name of the astronomical society in Providence, R. I., that built this Schwarzschild camera used by Prof. Charles H. Smiley, of Brown University (center) on an eclipse expedition. W. Edwin Stevens, left, and J. Frank Morrissey, right, built the instrument.



SALVAGE

Conversion of garbage into valuable oils and fats is engaging the study of 14-year-old Wallace Cloud, working in the Science Laboratory of the American Institute of the City of New York.

regularly, the newspapers are furnishing material for discussion at club meetings.

Almost every field of science is being covered by science club activities. Some fields in which science clubs can work and study are: Aviation, agriculture, anatomy, architecture, astronomy, bacteriology, biology, chemistry, conservation, electricity, embryology, engineering, entomology, gardening, general science, geology, home economics, hydroponics, medicine, meteorology, microscopy, mineralogy, ornithology, photography, physics, radio, research, science writing, taxidermy, telegraphy, television.

Scientific Construction

Here are some of the things that science clubs have constructed: Communication systems . . . photo-electronic organ . . . reflecting telescope . . . electrocardiograph . . . models of planes, trains, ships, wind tunnels, Link trainer, naval base, seismograph, stroboscope, bridges, electric eyes, water purification plant, coal tar plant, petroleum refinery . . . a House of Magic . . . arc furnace . . . motors . . . transmitting sets . . . bird houses.

Almost anyone can organize a science club. The organizer does not have to be a scientist. He need not

have studied science in school or college. He and the members of the club should be interested in doing something or studying some particular thing. There are no troublesome details or examinations. You can make your own rules and hold your meetings when and where you wish. Five is usually considered a minimum number to bring together to form a club.

Because Science Service is an educational non-profit institution, affiliation with Science Clubs of America is simple. Any group can affiliate with Science Clubs of America for a nominal \$2 and receive booklets telling how to organize, what to do, membership cards for all members and a club charter for framing. One feature of this certificate is that its gold seal has a ribbon, not of outmoded silk, but of fibers of glass, symbolic of the achievements of modern science.

Individuals May Be Associates

Any individual may become an associate of Science Clubs of America for a quarter, receiving not only a membership card but a useful book, the Science Handbook for 1942, ready at New Year's.

Science Service, from its own building

at 1719 N Street, Washington, D. C., will supply information about science clubs and answer any questions you may have.

Leading scientists look upon science clubs as serious aids to American progress in peace and war. Scientific hobbies can be much more than mere leisure time activity, amusement or recreation. They can even aid materially professional science research programs.

In the organization of home defense now underway, science club members can take a leading part in the more technical phases of protecting America.

Science News Letter, October 25, 1941

MILITARY SCIENCE

Defense Research Products Already Used in Battle

SOME EQUIPMENT developed by American scientists in the short space of one year's defense research has already seen trial under actual war conditions, President Karl T. Compton of the Massachusetts Institute of Technology told the 175th Anniversary Celebration of Rutgers University.

In a number of other directions the work of the National Defense Research Committee has been reflected in purchase orders for materials and equipment by the Army and Navy, Dr. Compton added. Much equipment developed by the researches of some 5,000 scientists and staff has undergone field test by the military services.

While the scientists engaged in the governmental research on defense approach their work with the enthusiastic conviction that it is well worth doing, Dr. Compton said that "in many cases there has been some inclination to doubt whether the armed services give adequate recognition to the significance of the results being obtained and show as much enthusiasm as could be wished about putting the results into production and use."

Science News Letter, October 25, 1941

● RADI

Thursday, October 30, 3:45 p.m., EST

On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Harlow Shapley, director of Harvard College Observatory, will discuss the role of the colleges and universities in advancing fundamental science.

Listen in each Thursday.

Monday, November 3, 9:30 p.m., EST

Science Clubs of America program over WRUL, Boston, on 6.04 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in high schools, throughout the Americas. Have your science group listen in at this time.

PUBLIC HEALTH

Vaccinations Ordered For Canadian Air Force

TO "keep 'em flying," all Air Force personnel in Canada and Newfoundland are being Schick and Dick tested for susceptibility to diphtheria and scarlet fever. Those found susceptible are being given injections of diphtheria toxoid and scarlet fever toxin.

More than 50% of personnel are susceptible to diphtheria on entering the Service, Flight Lieutenant A. H. Sellers, R.C.A.F. Medical Branch, reports (*Canadian Medical Association Journal*, October).

The number susceptible to scarlet fever exceeds 25% on the average, tests have shown.

"The health of the personnel of the British Commonwealth Air Training Plan has continued to be maintained at a high level," Lieut. Sellers states, "but outbreaks of diphtheria and scarlet fever during the winter and spring of 1940-41 caused sufficient sickness and loss of time to justify the introduction of procedures promising an effective measure of future control."

Science News Letter, October 25, 1941

MEDICINE

New List Available of Japanese Medical Journals

AMERICAN medical research workers and libraries can now obtain for the first time a complete list of Japanese medical journals. This new list has been compiled and issued as a service to American science by the Oriental Science Literature Service, administered by the American Documentation Institute, Washington, D. C. The director of the Oriental Science Literature Service is Joseph G. Yoshioka, Ph.D.

This publication, available at \$1, lists bibliographical data on 382 journals, giving the titles of the journals as transliterations, in Japanese characters, and English translations.

This new publication is only one of the functions of the Oriental Science Literature Service, inaugurated this year, which aims at the wider and more rapid dissemination of hitherto inaccessible Japanese scientific information, mostly in the field of the medical sciences.

Oriental Science Literature Service offers membership at \$3 a year which includes the Far Eastern Science Bulletin, issued monthly, containing abstracts of articles in current medical and bio-

logical journals in the Orient written in native languages. An important part of this service is the reduced rate of translations of such articles to make accessible to research workers scientific information at present not available because of the language difficulties.

Copies of "Japanese Medical Journals" can be obtained by remitting \$1 to the American Documentation Institute, 1719 N St., N. W., Washington, D. C.

Science News Letter, October 25, 1941

MILITARY SCIENCE—AGRICULTURE

British Advise Farmers On Protection of Crops

PRECAUTIONS against air attack on crops in the field have been taken by the British government, Sir John Russell of the Rothamsted Experimental Station, internationally noted agricultural authority, states in a communication to the scientific journal, *Nature* (Aug. 23). This "agricultural ARP" has been made the subject of three special bulletins issued by the Ministries of Agriculture and of Home Security.

Field crops may be attacked with either incendiary bombs and leaves or the more lingering kinds of poison gas, Sir John states. From fire there is little to fear in Britain, except in unusually dry seasons like the summer of 1940. The climate is much too damp, most of the time.

Of Britain's three chief grain crops, barley is the only one commonly left in the field until dry enough to burn. Oats and wheat are usually reaped while they still contain considerable amounts of moisture.

Stubble fields might be set afire after the harvest is in. Stubble fires in themselves are relatively harmless, but they may spread to stacked or stored grain in or near the fields, or to haystacks. For this reason, prompt plowing of stubble fields is advised, or at least plowing in strips dividing the fields into squares, so that the spread of fire will be limited.

Chemical warfare against crops has not yet been attempted, but the responsible authorities are overlooking no chances. It is unlikely that chemicals would be used to do direct harm to the crops. More probable is the spread of vesicants, like mustard gas or Lewisite, which would subsequently harm persons or animals coming in contact with the grain or stalks. Advising local ARP authorities, meanwhile letting the contaminated areas strictly alone, is the indicated treatment.

Science News Letter, October 25, 1941

IN SCIENCE

ANTHROPOLOGY

Speaking of Halloween—Ancients Drank from Skulls

WITH Halloween just ahead, comes news from the Smithsonian Institution that early America's cannibals way up North drank from human skulls, real ones. There was no drinking cup shortage.

New examples of these macabre cups, found by Dr. Ales Hrdlicka of the Smithsonian staff at prehistoric village sites on Kodiak Island, Alaska, are described in a publication on recent excavations, just issued. Dr. Hrdlicka suggests that skulls of brave enemies may have been valued as cups through the belief that a beverage in such a cup would transmit valor.

The practice of drinking from skulls was once widely followed over the world, and some prehistoric peoples of North and South America, as well as Europe, did this.

Studying bones of the pre-Koniags, as Dr. Hrdlicka has named the very ancient Kodiak Islanders, the anthropologist says that they had very little disease, no dental decay, fewer broken bones than moderns have, and their main disease curse was senile arthritis. Their medicine men did primitive surgery of boring holes through the skull, and from skulls discovered, it appears that they reserved this operation for women.

Science News Letter, October 25, 1941

AERONAUTICS

Seaplane Landing Lights Float on Rubber Doughnuts

See Front Cover

THE GREAT array of curious looking glass domes shown on the front cover of this week's SCIENCE NEWS LETTER is part of a much larger number of lamps intended to mark out landing places on the water for seaplanes. They are floated on rubber "doughnuts" and can be turned on and off either by radio or by hand. They are shown in the picture being given a final inspection before being put to use.

Science News Letter, October 25, 1941



ARCHAEOLOGY

Yo, Ho, Ho! Science Explores Pirate City

YO, HO, HO! And what's under the jungle vines where the wicked pirate city of Basseterre stood on the tropic isle of Tortuga?

Ruins of a buccaneer fort that is a military masterpiece is the answer revealed by Dr. Alfredo Metraux, Smithsonian Institution anthropologist, who has given the famous pirate capital its first archaeological survey for science.

The ruins, ten miles north of Haiti, were plenty lively in seventeenth and early eighteenth centuries, when French and English privateers each wanted Basseterre as their magazine for munitions and stores seized on the Spanish Main. British and French captured the fort from each other nine times. Brass cannon and cannon balls were found by Dr. Metraux buried in mud or smothered in vines.

Noted for wild gambling and drinking orgies, Basseterre has preserved no trace of the thatched houses where the pirates and their native families lived.

Pirates cannot be blamed, Dr. Metraux believes, for large caves filled with skeletons, which he examined. These are bones of Arawak Indians, such as met Columbus when he reached America—not storage of pirate victims.

Science News Letter, October 25, 1941

PHYSIOLOGY—PSYCHOLOGY

Day Without Vitamin A Increases Night Blindness

IF YOUR diet is extremely deficient in vitamin A for just one day, night blindness may result that will increase your accident-hazard in night driving. This discovery was made by psychologists at the University of California under the direction of Dr. C. W. Brown, associate professor of psychology.

Ten students were the guinea pigs for these tests, and Dr. Brown divided them into two groups. One group ate foods with high vitamin A content for 12 days. The other group omitted A-containing foods from their diet. Then each group reversed the diet program for

another 12 days. At the end of each 12-day period students' eyes were tested by an apparatus developed by Dr. Brown for quick testing of glare blindness. A light was flashed in front of students' eyes for a short period, then the time for "vision recovery" was measured in a nearly dark room. Those who had been on a high vitamin A diet recovered from glare blindness in 18.03 seconds, while those with vitamin A deficiency took 22.70 seconds to adjust their eyes to dim illumination.

After one group on the excessive A diet switched to the deficient foods, their more rapid recovery time from glare blindness was lost within one day. When the other group began their deficiency diet, the glare-recovery time became longer gradually until the fifth day, then remained the same throughout the rest of the 12-day test.

The difference between the glare recovery time of the two groups was not great: 4.76 seconds, but enough to be significant. While the small number of students used in the tests does not permit any final conclusion on the exact time required for vitamin A deficiency to affect night blindness, the results are significant, Dr. Brown believes.

Science News Letter, October 25, 1941

PHYSICS

Most Energetic Particles Made With Cyclotron

ATOMIC BULLETS as powerful as some of the cosmic rays and the most energetic man has ever produced—96,000,000 electron volts—have been manufactured with the University of California 225-ton cyclotron, Dr. Ernest O. Lawrence, Nobelist, made known at the University of Chicago Fiftieth Anniversary Celebration.

This is six times the highest energy previously achieved, that of deuterons (heavy hydrogen) at the same maximum speed.

With carbon bullets Dr. Lawrence expects to be able to take six steps up the atomic ladder in transmuting elements. If iron were bombarded it would become arsenic.

With the giant new cyclotron now building at Berkeley, carbon bullets of 600,000,000 electron volts will be possible.

The research accelerating carbon atoms from carbon dioxide gas was done by Dr. Emilio Segré and Cornelius Tobias in the University of California Radiation Laboratory.

Science News Letter, October 25, 1941

MEDICINE—ENTOMOLOGY

Army Is Working on Anti-Chigger Weapon

ANNOUNCEMENT by the U. S. Army of a new weapon, for use against chigger blitzes, will be made soon. Reports that the battle of the chiggers had been won during the Louisiana maneuvers, however, were premature, officials in the Surgeon General's office at the War Department state.

Several ointments to repel chigger attacks are being tested and, as in the case of other Army weapons, specific suggestions for improvement are being made to the manufacturers. None of the preparations, however, has so far been officially approved.

For the benefit of civilians, U. S. Public Health Service skin disease specialists point out that chemicals in modern insecticides, such as pyrethrum, derris and rotenone, will probably kill chiggers as well as mosquitoes and flies and might be incorporated into a skin ointment. A pyrethrum ointment for treatment of scabies is now on the market. Since the itch mite which causes scabies bores beneath the skin like the chigger, this scabies ointment might also prove useful as a chigger ointment.

Science News Letter, October 25, 1941

MEDICINE

Find Why Fatal Pneumonia Starts With Severe Chill

GEORGE WASHINGTON had a severe chill before he died of pneumonia. That was over 100 years ago.

Today physicians know why fatal pneumonia often starts that way. Prof. Oswald H. Robertson of the University of Chicago explained the reason to the University of Chicago's 50th Anniversary Celebration.

Chilling of the body surface, Prof. Robertson said, causes a slight contraction of the epiglottis, the lid-like valve that closes the upper end of the windpipe during swallowing and prevents food particles and liquids from going down your "Sunday throat." With this vital valve reduced to a poor fit, fluids from the nose, mouth and upper part of the throat can get down into the lungs, carrying with them pneumonia germs that have accumulated in those entryways to the outer world. If there is an irritated condition in the lungs, as from a cough already started, pneumonia is likely to follow.

Science News Letter, October 25, 1941

ASTRONOMY

Four Planets Shine

November's Display Is Best in More Than a Year; Venus, Mars, Jupiter and Saturn Seen After Sunset

By JAMES STOKLEY

WITH FOUR bright planets shining in the evening sky this month we have the best display of these brother and sister worlds of the earth since early last year. Then, it will be recalled, all five that can be seen with the naked eye were lined up at once in the west. This month there is no such striking line-up, and Mercury is not visible with the others. But the rest, Venus, Mars, Jupiter and Saturn, can all be seen in the sky from about one to three hours after sunset, and they are all unusually bright.

Venus, most brilliant of all, with magnitude of minus 4, is the first to appear, low in the southwest, in the constellation of Sagittarius, the archer. This is not, by the way, shown on the accompanying maps, as they are adjusted for later in the evening. They show the skies of 10 p.m. Nov. 1, and 9 p.m. at the middle of the month. Venus sets about three hours after the sun, which is earlier, but it can easily be located because of its splendor.

Mars, now receding from earth after its close approach last month, is getting fainter than it was. However, of the magnitude minus 1.5, it is still exceedingly bright, and you can easily see it, with characteristic ruddy glow, in the south in the figure of Pisces, the fishes.

Saturn Rises at Sunset

Directly opposite the sun on Nov. 17, Saturn rises at sunset and is visible through the night. Its magnitude is minus 0.1, fainter than the other three planets, but brighter than most of the stars. Its location, in Taurus, the bull, to the southeast, is shown on the map.

Jupiter, in brightness, is second only to Venus this month. Its magnitude is minus 2.3. It rises about an hour after sunset, in Taurus, the bull.

Although Mercury, sole remaining planet that becomes visible to the naked eye, is not in this party, it will appear this month as a morning star. On Nov. 11 it is farthest west of the sun, and

rises well before sunrise. For a few days around that date, it will be seen low in the southeast as dawn is breaking. In brightness it will then be slightly superior to Saturn.

With the stars this month, we can begin to see the glorious figures that shine so brilliantly in the wintertime. Orion, the warrior, is low in the east. The three stars of his belt form a vertical row. Above him is Taurus, the bull, with ruddy Aldebaran, and Capella, in the figure of Auriga, the charioteer. And north of Orion you can begin to see the twins, Gemini.

To the west, Altair, in Aquila, the eagle; Deneb, part of Cygnus, the swan; and Vega, of Lyra, the lyre, which we have enjoyed during recent months, are slowly descending and will, a few months hence, be gone from the evening sky. The great dipper is now right on the northern horizon, its poorest evening position of the year, but M-shaped Cassiopeia, the queen on her throne, rides high above the pole star.

Telescope Provides Interest

To anyone able to look at the heavens through a small telescope, this month offers many interesting sights. Venus, for instance, though it looks like a bright star to the unaided eye, with a relatively small instrument is revealed in a crescent phase, like that of the moon several days after new. Venus does undergo phases, like those of the moon, and for the same reason. Illuminated by the

sun only, one hemisphere is lighted, the other is dark. When the entire sunlit half is turned to us, we see a full moon, or a "full" Venus. But now Venus is swinging between us and the sun, so that only a small section of the bright half is visible from earth. Hence, the crescent phase. However, even the telescope fails to show any detail on Venus, since it is continually covered with white clouds, which perpetually hide the planet's surface.

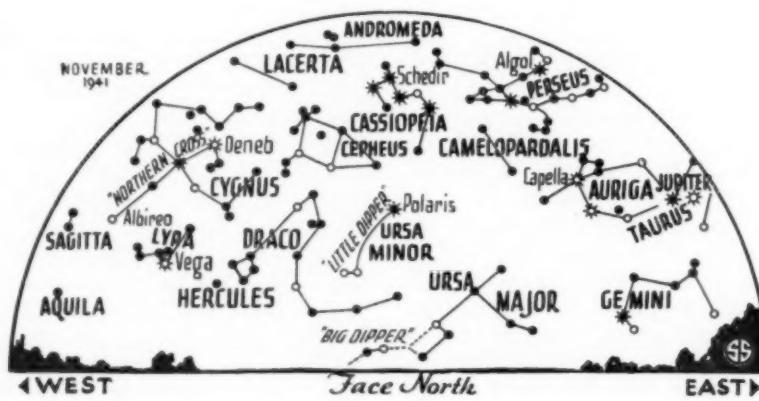
Though Mars is not handicapped by such a cloud layer, it is rather disappointing, even through a big telescope. However, it is possible to see dark markings, which are permanent, and sometimes white areas around the poles, probably regions of ice and snow, which change with the Martian seasons.

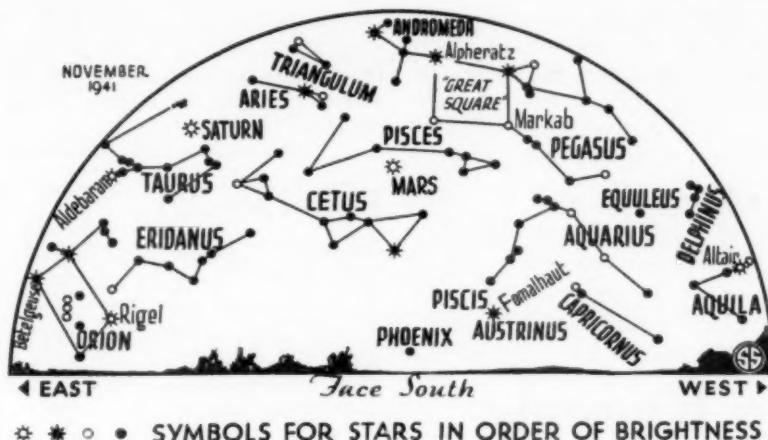
Jupiter's Belts Visible

Jupiter, largest of the planets, is also continually covered with an atmosphere, though this presents interesting color changes. This atmosphere consists of methane and ammonia, and contains clouds of the same gases, in the form of frozen particles. These show up, through a telescope, as belts, parallel to the planet's equator.

Jupiter's four bright moons are also of interest through the telescope, as they are constantly disappearing and reappearing. Sometimes they are eclipsed, as they penetrate Jupiter's shadow. At other times they are occulted, hiding behind the planet. Or they may vanish in transit, as they pass directly in front of Jupiter. Of nearly the same color as the planet, they are then quite invisible.

Late on the night of Nov. 23 a busy





program is laid out for these moons. At 11:48 p.m., E. S. T., on the 22nd, satellite III, which is called Ganymede, will be eclipsed as Jupiter's shadow engulfs it. At 1:16 a.m., II, Europa, will disappear in a similar way. At 2:38 a.m., I, known as Io, will be out of sight when it starts a transit in front of the planet. This will leave only satellite IV, Callisto, visible until 3:54 a.m., when Ganymede will emerge from behind Jupiter. At 4:42 a.m., Europa will return to view, followed six minutes later by the reappearance of Io, after which all four moons will again be visible. Io will then be seen on the western side of the planet, the others to the east.

And also in the evening sky is Saturn, whose rings are probably the most interesting sight of all to most observatory visitors. Now they are very well seen. These rings consist of a vast swarm of tiny moons. In addition, Saturn has nine other moons, two short of Jupiter's total of 11. But the Saturnian moons are not as easy to see, and they are not eclipsed nor occulted.

Our own moon, also, is taking part in an occultation this month. On Nov. 6, two days past full, it will pass in front of the bright star Aldebaran,

in Taurus. As seen from Washington, the star will be hidden at 6:02 a.m., E. S. T., and will reappear at 7:03 a.m. Farther west, it will happen earlier, long before dawn. At a selected point in northern California, for which calculations have been made, the star will hide at 2:07 a.m., P. S. T., and will reappear at 2:51 a.m., P. S. T. This is one of a series of occultations of this star occurring this year.

Celestial Time Table for November

Saturday, Nov. 1, 9:35 a.m., Moon passes Mars. Monday, Nov. 3, 9:00 p.m., Full moon. Wednesday, Nov. 5, 1:50 a.m., Moon passes Saturn; Noon, Moon farthest, distance 252,500 miles. Thursday, Nov. 6, Early morning, Moon occults Aldebaran. Friday, Nov. 7, 2:57 a.m., Moon passes Jupiter. Tuesday, Nov. 11, 10:00 p.m., Mercury farthest west of sun; 11:53 p.m., Moon at last quarter. Sunday, Nov. 16, Early morning, Meteors of Leonid shower visible. Monday, Nov. 17, Noon, Moon passes Mercury; 2:00 p.m., Saturn opposite sun and nearest earth with distance of 756,300,000 miles. Tuesday, Nov. 18, 7:04 p.m., New moon; 9:00 p.m., Moon nearest, 221,700 miles distant. Saturday, Nov. 22, 5:23 a.m., Moon passes Venus; Midnight, Venus farthest east of sun. Tuesday, Nov. 25, 12:52 p.m., Moon in first quarter. Friday, Nov. 28, 5:10 p.m., Moon passes Mars.

Eastern standard time throughout.

Science News Letter, October 25, 1941

INVENTION

Plane That Lifts Its Tail Brings Patent To German

A N AIRPLANE that lifts its tail like a bird when it sits down on land or water is among 858 inventions granted U. S. Patents recently.

The plane, of truly revolutionary design, is the invention of Claude Dornier, famous German airplane designer, who

was awarded U. S. Patent 2,257,940.

The whole rear is carried on a hinge in such a way that it can be lifted to a high angle. This rear end also carries the entire power plant, the usual vertical fin and rudder, the horizontal tail planes and elevators, and a pusher pro-

peller situated at the tip of the tail.

This new design with the engine inside the fuselage and propeller in the rear, with no projections or obstructions permits a far higher degree of streamlining than is possible with a flying boat of the usual type, which has an elevated wing and motors in the wing. In landing or starting, the whole tail including engine and propeller is lifted clear of the waves. Another feature of the design is that it provides a step on the under surface of the fuselage when the tail is lifted, which step completely disappears when the tail is lowered for normal flying, and thus avoids the formation of undesirable eddy currents.

Science News Letter, October 25, 1941

Bacterial War on Beetle

A NEW method of germ warfare against the Japanese beetle, which has so ravished our fruits, vegetables, trees and flowers, is the invention of Samson R. Dutky of Moorestown, N. J., Patent 2,258,319, who has assigned his patent rights to the U. S. Government without any payment of royalties to himself.

Instead of poisons or poison gas, Mr. Dutky compounds an insecticide of ground up bacteria of the kind that produce an ailment known as milky disease in the larvae of the Japanese beetle and related insects. The bacteria are mixed with an inert substance, chalk, marble dust, or similar powder, in such proportion that each ounce of the powder contains 30 billion of the deadly spores.

The insecticide can be diluted with water to use as a spray, or mixed with solid materials and applied directly on the ground or mixed with the soil.

The bacteria used belong to the groups *Bacillus popilliae* and *Bacillus lentimorbus*.

Science News Letter, October 25, 1941

RESEARCH

Research Job For Defense Used 150 Scientists

ONE of the most extensive jobs of scientific research in the defense effort took 150 different physicists from 25 different universities to the Massachusetts Institute of Technology's Radiation Laboratory to work on "a highly confidential and important subject with the greatest possible speed," President James Bryant Conant of Harvard, Chairman of the National Defense Research

Committee, revealed in a phonographically recorded message sent to the "Science and the New World Order" conference of the British Association for the Advancement of Science in London.

Approximately 1,000 scientists are at work for the NDRC in universities and 700 in industrial laboratories, Dr. Conant said. Three-quarters of the most distinguished research physicists of the nation are now at work on war prob-

lems, he added, and the remaining 25% will be at work in a few months.

"We have found that the nature of the problems in this present war are such that physicists and certain types of engineers are in greater demand than chemists."

Dr. Conant gave no hint as to just what secret weapon was developed by the large group of scientists working at M.I.T.

Science News Letter, October 25, 1941

BOTANY

Radioactive Carbon Reveals Secrets of Photosynthesis

New and As Yet Unidentified Substance Discovered That Does What Formaldehyde Was Supposed To Do

TEXTBOOK theories of photosynthesis have been upset by the use of radioactive carbon, a product of the atom-smashing cyclotron, in tracer studies at the University of California. This product was used by Dr. S. Ruben of the Department of Chemistry, and Dr. M. D. Kamen of the Radiation Laboratory, to test former theories of plant chemistry.

A new and as yet unidentified compound that does what formaldehyde was supposed to do has been discovered.

All animal life depends on the ability of plants to convert inorganic elements into organic forms that can be assimilated by animal organisms. Any animal, from man to microbe, would starve if soil, water and air, primary storehouses of nature's supplies, were his only source of food. But plants can use elements in the raw and by a mysterious chemical process involving chlorophyll, a green coloring matter, change basic elements

into sugars, starches, proteins, vitamins and other organic foods according to their kind. This process is known as photosynthesis.

The mystery of photosynthesis has long baffled and intrigued scientists, and though theories on the process have been offered, none could be proved because chemical methods of proof were inadequate.

The most widely accepted theory of photosynthesis was that plants take carbon dioxide, light and water and produce formaldehyde. This process, common to all plants, was supposed to be an intermediary step, preceding the chlorophyll action that produces carbohydrates and other nutritive substances.

Dr. Ruben and Dr. Kamen placed algae plants in chambers containing radio-active carbon in a carbon dioxide compound. Leaves of the plants literally pulled the charged element from the air and its course through the plant could then be followed. If the old theory were true, the tagged carbon should appear in the formaldehyde formed by the plants, but this substance extracted from the test plants contained none of the active carbon.

An unsuspected compound was discovered, however, that contained most of the charged carbon the plant "breathed"—the true intermediary step in photosynthesis. The chemical formula of this important compound has not yet been determined, but scientists are hard at work on this problem.

Dr. Ruben, Dr. Kamen and their associates also disproved the theory that photosynthesis is a process carried on

exclusively in the light. They found that some phases of the process may be independent of light, for plants continued to assimilate charged carbon dioxide in total darkness.

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pressed the "practical hope" that intellectual peaks may in future be reached and maintained on a less opportunistic basis through a systematic program of research by biological and social scientists of the factors that tend to maintain and restore mental vigor.

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Find Cancer-Causing Rays

IDENTIFICATION of rays from the sun that cause skin cancer was announced by Dr. H. P. Rusch and Dr. B. E. Kline, of the University of Wisconsin, to the National Academy of Sciences.

The rays are 2,900 to 3,341 Angstrom units in length and lie in the ultraviolet part of the sun's spectrum from which also come skin tanning and rickets healing rays.

White mice exposed to these rays developed within two and one-half months tumors which were "true malignant cancers of the same type found in humans," the Wisconsin scientists reported.

Very little radiant energy was needed to start the changes which ended in cancer.

The sun's rays have long been suspected of playing a part in causing cancer. The high incidence of skin cancer in sailors has long been known, and nearly 50 years ago, Dr. Rusch pointed out, "seaman's skin" was described as a precancerous condition due to continued exposure to sunlight.

Strong experimental support for the theory that sunlight is a direct cause of cancer has, however, only come within the past decade.

Science News Letter, October 25, 1941

Better Cancer Treatment

HOPES that practical methods may be developed for making healthy tissues resist X-rays that fight cancer cells is raised by experiments reported to the Academy by Dr. Titus C. Evans of the University of Iowa.

A great problem in cancer therapy is to give a large enough dose of the roentgen rays to have effect upon the cancer and leave the tissues around it unharmed.

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In one experiment Dr. Evans found that the resistance of the skin is increased when the circulation of the blood is blocked during irradiation.

Science News Letter, October 25, 1941

Star Caught in Evolution

A STAR that has been caught in the act of changing from one kind to another was reported to the Academy by Dr. Otto Struve and Dr. P. Swings of the McDonald and Yerkes Observatories.

This spectacular case of speedy evolution concerns a Gamma Cassiopeiae, which a few years ago was a normal emission line B star and had a tenuous shell around it. The shell started to close in toward the star, and finally about the first of this year, the shell seems to have fallen into the reversing layer of the star.

In the case of several other stars, notably Z Andromeda and AG Pegasi, opposite events have taken place. New shells have recently formed and expanded.

Science News Letter, October 25, 1941

Microbe Armies in Soil

THE POSSIBILITY of so controlling the microorganisms of the soil that they do their job of destroying waste matter and even harmful parasites when it is most beneficial to the farmer was presented to the Academy by Dr. Charles Thom of the U. S. Department of Agriculture's Bureau of Plant Industry.

Soil organisms are known to vary from comparatively small totals to fabulous numbers. There is the possibility of controlling this speedy multiplication so as to rob a root parasite of available food or actually destroy the parasite, Dr. Thom indicated. This may prove effective in the case of take-all of wheat and cotton root rot.

Science News Letter, October 25, 1941

Immunizes Chickens

A WAY to immunize chickens against a serious disease, coccidiosis, was reported to the Academy by Dr. C. H. Herrick of the University of Wisconsin.

This ill is caused by a protozoan parasite which is transmitted by oocysts or egg bodies. Dr. Herrick X-rayed these oocysts and in this way reduced their power to produce illness.

By feeding day-old chicks with X-ray attenuated oocysts the fowl were made resistant to the disease without bad effects on their growth or development.

Science News Letter, October 25, 1941

Nicotine Made in Roots

THE NICOTINE in tobacco is manufactured in the roots of the plant, Dr. Ray F. Dawson of the University of Missouri reported.

Tomato tops were grafted upon tobacco plants and tobacco stalks were made to grow on tomato stocks in order to locate where the "kick" chemical in tobacco actually originates.

Tobacco leaves and stems grown on tomato roots did not increase in nicotine content and new leaves after the

graft was made were nicotine free. When grafted on tobacco plants, tomato leaves gained much nicotine.

Science News Letter, October 25, 1941

Gives 4,500,000 Volts

AT LITTLE cost the electrostatic generator or atom smasher of the University of Wisconsin has been increased in power from 2,600,000 volts to 4,500,000 volts, a research team consisting of Drs. R. G. Herb, C. M. Turner and A. O. Hanson told the Academy.

Science News Letter, October 25, 1941



Courtesy of American Museum of Natural History, New York

When *Gorilla savagei* Visits a City Classroom

TO city classrooms Bausch & Lomb Balopticons have brought *Gorilla savagei* and other denizens of the wilds . . . to dust-shrouded schools of Mid-Western plains, the rainbow-hued marvels of the Bermuda Deep . . . to mountain schools, the architectural wonders of spired Manhattan.

Scenes from the far corners of the earth, photographs requiring costly expeditions to acquire, specimens found once in a scientist's lifetime—are now presented for leisurely, detailed classroom study by beginner and expert alike.

All this is made possible because of the Bausch & Lomb Balopticon, a simply operated, economical still projection instrument.

So universally is this projector used that the trade name "Balopticon" has become a common noun to be found in the modern dictionary.

To the pupil in the classroom, to the scientist working with precision optical instruments and to the wearers of Bausch & Lomb eyewear, the Bausch & Lomb name stands for optical excellence. This name, through the many years of the company's existence has become a part of the pattern of American living.

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New Machines And Gadgets

Novel Things for Better Living

A bakery in Sweden, where gasoline is rationed, has solved the problem of fueling its 50 cars and trucks by utilizing the ethyl alcohol fumes rising from the bread ovens. Special equipment, probably the first of its kind in the world, collects the steam and distills it to provide 96% alcohol. The cost of the fuel is approximately 33 cents per gallon.

Flickering fluorescent lamps will be a thing of the past when a new protective starter is universally applied. When a lamp grows old it begins a constant flickering and the starter, continually trying to light a lamp that won't light, gets worn out, too. The new starter prevents all this by promptly cutting the light out of the circuit when it begins to flicker.

The pupil of your eye is a very accurate measurer of light intensity. This is made use of in a little patented device for timing camera exposures. A small mirror has a number of circular spots of increasing size along its lower edge, representing different sizes of the eye pupil. You hold the mirror in front of you, look first at the object to be photographed, then at yourself in the mirror, and match the pupil size of your eye with one of the spots on the mirror. This gives the light intensity according to which the exposure is to be timed. This device is of course much simpler and cheaper than a photoelectric cell meter, and is claimed to be very accurate.

Fiberglass wool and semi-rigid fiberglass insulating board are streaming out of this machine in a great glass factory. The stream in back is the fiberglass board. These glass products are used for heat and sound insulation, particularly in the great windowless walls of the new Army bomber plants, some of which are three-quarters of a mile



long. They absorb 60 to 75 per cent. of factory noises. The windowless walls make possible a complete blackout in time of war without interrupting the work of building airplanes.

A new thermostatic robot which regulates the amount of engine heat supplied to the carburetor saves gasoline. At low speeds much heat is required; at top speeds none at all. At intermediate speeds the heat should be regulated according to the speed, and this the robot does. It also takes care of the wide variations between summer and winter temperatures. By this precise regulation of the heat supplied to the carburetor, more complete vaporization of the liquid and more even distribution of the gas to the cylinders are secured. Both make for economy of fuel.

Frequency modulation, the radio that eliminates static, is on the air. Several broadcasting stations are using this method and their number is increasing. Meanwhile, combination receivers are being manufactured that can be used for both the usual amplitude modulated, and for the frequency modulated sta-

tions. Some of these new receivers have four bands, the usual three for the ordinary long and short wave broadcasts, and one for the frequency modulated stations. The FM band extends from 42 to 50 megacycles.

Forever blowing bubbles is a realistic little minnow composed of wood and rubber. The bubbles are provided by a capsule of Seidlitz powder or similar material in his little inside. He has a nose, a mouth, eyes and gills, and darts up and down according as the line is pulled in or slackened off. Also he has a perfectly good U. S. patent. The fish should be crazy about him.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 76. Science News Letter, October 25, 1941



SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

The proximity of the U. S. Technical Air School to the Sacred Heart Academy of Biloxi, Miss., has stimulated the Science Club of the Academy to greater activity, according to a report of Sister M. Frances Xavier, R.S.M., sponsor of the club.

Cesar Timo Iaria of R. Cristiana Viana, 498, Sao Paulo, SP., Brasil is an "unconditional admirer of scientifically minded American youth" and hopes some day to found an organization similar to Science Clubs of America. Meanwhile, he would like to maintain correspondence with those in America and other lands having scientific inclinations.

In a recent article by Harold S. Tuttle, "Do Junior High Schools Cultivate Desirable Aptitudes?" appearing in *The Clearing House*, we find that the ranking interests of Junior High School students are: first, reading newspapers; second, club activities. Dr. Tuttle then lists other interests based upon a study of 7,000 pupils in 50 schools distributed among 18 states and representing every section of the country. No wonder, then, that the science clubs movement, although usually an extra-curricular activity, plays such a prominent part in education and adaptation to the curriculum of life. Dr. Tuttle is a member of the faculty of the School of Education, College of the City of New York.

The Biology Club of Greenville Senior High School, Greenville, Texas, D. F. Johnson, sponsor, is divided into five distinct units corresponding with the class periods, each of which is a separate club. They plan programs for broadening textbooks study, photograph nature scenes, make field trips and work upon and demonstrate biological techniques and projects.

The Biology Taxidermy Research Club of Enid Senior High School, Enid, Okla., has become affiliated with Science Clubs of America. Last year one of the members of this club sent an exhibit to The American Institute Science and Engineering Fair held in the American Museum of Natural History in New York City. This exhibit of stuffed birds, deer-foot knives, thermometers, ash trays, rattlesnake skeleton necklaces, etc., was complimented most highly by museum curators. It won a prize. This club is also a member of the Oklahoma Junior Academy of Science and two of its former members have received recognition in the A.A.S. of Oklahoma. All of this is a mighty high tribute to Merle M. Boyer, sponsor.

Clubs are invited to become affiliated with SCA for a nominal \$2 for 20 members or less. You can become an associate of SCA for 25 cents, which includes a copy of the 128-page *Science Handbook for 1942*. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

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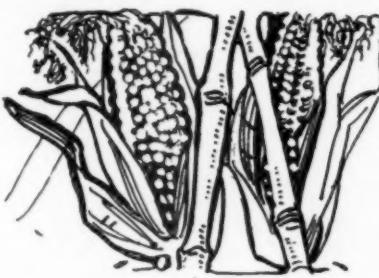
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Science News



Accidental Inventions

OME of the most important things man has originated have apparently been done by accident.

Domestication of animals, although of unknown time and place of occurrence, is rather generally conjectured to have begun when a Stone Age hunter, instead of killing the young of some animal he had taken for food, brought them home alive and let them tumble around the cave floor with his own children until they grew up tame. Perhaps cultivation of plants began in much the same way, through the spontaneous sprouting of seeds or root fragments cast aside on the kitchen midden.

Isn't it just possible that the art of making polished stone tools and weapons, which is the "key" technique that distinguishes the Neolithic Age from the Paleolithic, may have come to pass in a similar semi-accidental fashion?

The great cultural advance commonly credited to the Neolithic or New Stone Age is the beginning of agriculture. Paleolithic man, who could make very good flaked or chipped stone tools, did not polish them; neither did he grow food crops. So we commonly say that Neolithic man invented agriculture.

Isn't it possible that it was the other way around: that agriculture was responsible for the first polished stone tools? We can picture the first field hand (very likely a woman) hoeing a patch of yams or half-wild barley with a rudely shaped stone blade fastened to a stick. Her husband, squatting in the shade of the hut nearby, is patiently pecking away at a piece of stone he is shaping into an ax-head.

Presently his spouse comes to him to have the hoe-blade refastened; it has worked loose again. Impatiently the man

lays aside his job to attend to the hoe. Then he notices how rubbing in the earth for hours has made it smooth. He feels at its surface with his rough finger.

An idea has suddenly popped into his shaggy head. Maybe if he rubbed earth (better yet, sand) on that ax-head from now until sundown it would become a smoother, better tool. Worth trying, anyway. And so the New Stone Age is born.

PUBLIC HEALTH

Blood and Plasma Banks Saved Thousands in England

Birmingham, England, Has 18,000 Registered Donors Who Regularly Contribute; Nothing Like It in U. S.

LOOD and blood plasma banks in England have saved thousands of lives of civilians who would otherwise have died of shock due to injury and loss of blood, Capt. Charles S. Stephenson, Medical Corps, U. S. Navy, reported to the Secretary of the Navy on his return from a seven weeks' inspection tour of bomb-torn England.

A large reserve of dried plasma must be built up in the United States, he declared, for use in civil catastrophes and time of war.

Birmingham, England, he said, has 18,000 registered donors who regularly contribute blood to the blood and plasma bank for that city. Other English cities have proportionately large registers of blood donors.

"We have nothing like that yet in the United States in any city of the same size," Capt. Stephenson said, referring to the Birmingham donor register.

Largest single American blood bank is in Baltimore, Md., where 5,000 blood donations have just been completed under

Probably the invention of polished stone implements was not quite so sudden an affair as that. Great inventions are seldom the work of one individual genius. But the first step in the improvements that eventually produced some of the beautifully shaped and finished objects we admire in museums may have been taken in some such humble way as that.

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the auspices of the American Red Cross. The Red Cross national bank for use of the armed forces and civilians in case of catastrophe, of which the Baltimore bank is a part, now has 15,000 blood plasma units on deposit. Plans call for building this initial bank to 200,000 units.

Dried blood plasma is made by separating the plasma or fluid portion from the rest of the blood, freezing it and drying under a high vacuum. The dried plasma keeps for as long as nine years, can be used for any patient without preliminary typing, and is easier to transport than fluid blood or plasma. It is produced under strict control to insure its being germ-free.

"I studied precise clinical reports (on its use) in England and found that the technique is not only successful beyond expectations, but that it can be carried out under conditions of stress and strain on the part of the medical staff which would at first appear impossible," Captain Stephenson said.

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•First Glances at New Books

CHEMISTRY

TEST IT YOURSELF! Chemistry Experiments with Consumer Applications—Lawrence F. Tuleen, Willard L. Muehl and George S. Porter—*Scott, Foresman*, 290 p., 96c. The experiments in this work book are tied to everyday experience, as well as 14 widely used chemistry texts. Wide use of such a class aid should do much to produce men and women intelligently informed about the chemistry of common things.

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GENERAL SCIENCE

LIVES AND DOLLARS, The Story of Today's Research—J. D. Ratcliff—*Dodd, Mead*, 225 p., \$3. Stories of scientific researches that save lives and dollars, vividly told.

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CHEMISTRY

THE CHEMICAL FORMULARY, Vol. V—H. Bennett, ed.—*Chemical Pub. Co.*, 674 p., \$6. Formulae compiled in this volume amplify and bring up to date the contents of the previous four volumes. An introductory chapter has been added giving simple directions and advice in the art of chemical compounding which will be useful to beginners and even to those of some experience.

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TECHNOLOGY

MOLDING TECHNIC FOR BAKELITE AND VINYLITE PLASTICS—*Bakelite Corporation*, 224 p., illus., \$3.50. Information from every available source has been gathered for this sumptuous loose bound volume which confines itself to molding technic and does not go into physical and chemical properties of the materials.

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ENGINEERING

THE COLORADO CONQUEST—David O. Woodbury—*Dodd, Mead*, 367 p., \$3. The subtitle of this book is, "The Epic Story of Imperial Valley, Boulder Dam and the Taming of a Mad River," meaning the Colorado. It is indeed a thrilling and exciting account of the struggles with this river from the earliest pioneering days down to the completed Boulder Dam of today.

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ECONOMICS—HISTORY

ECONOMIC HISTORY OF EUROPE—Sheppard Bancroft Clough and Charles Woolsey Cole—*Heath*, 841 p., illus., \$4. Starting with the Middle Ages, because the

authors consider that most of the important elements of modern economic life have come into being since then, this dynamic work moves up to the verge of the present war. By dealing in specific incidents and events, rather than generalizations, the writers bring a very complex subject remarkably to life.

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SOIL SCIENCE

THE SOILS THAT SUPPORT US, An Introduction to the Study of Soils and Their Use by Men—Charles E. Kellogg—*Macmillan*, 370 p., illus., \$3.50. A textbook for a first course in soil science, that can be used profitably by the general reader who wishes to inform himself on this increasingly important field.

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GENERAL SCIENCE

ANNUAL REPORT OF THE DIRECTOR TO THE BOARD OF TRUSTEES FOR THE YEAR 1940—*Field Museum of Natural History*, 151 p., illus., \$1.

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ANATOMY—PHYSIOLOGY

BIBLIOGRAPHICA PRIMATOLOGICA, A Classified Bibliography of Primates Other Than Man, Part I—Theodore C. Ruch—*C. C. Thomas*, 241 p., \$8.50. Anthropologists, biologists and medical scientists will welcome this aid to their studies.

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PSYCHOLOGY—EDUCATION

HANDBOOK OF EDUCATIONAL PSYCHOLOGY AND MEASUREMENT—M. J. Nelsen—*Dryden Press*, 174 p., \$1.25. Something more than a dictionary of technical terms (this is contained in Part II) but a handy, condensed summary of information useful to the student of educational psychology.

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PSYCHOLOGY—SOCIOLOGY

OUTLINES OF SOCIAL PSYCHOLOGY—Arthur L. Beeley—*Univ. Book Store, Salt Lake City, Utah*, 137 mimeographed p., \$1.15. A textbook prepared for the use of Dr. Beeley's own students and presented here in mimeographed form. It holds interest, however, to the general reader who wonders why men and nations behave as they do. The title is accurate—the work is in outline form with many suggestions for further reading.

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CHEMISTRY

TORCH AND CRUCIBLE, The Life and Death of Antoine Lavoisier—Sidney J. French—*Princeton Univ. Press*, 285 p., \$3.50. A vivid account of the stormy life and tragic death of the founder of the oxygen theory of combustion and of his scientific and political activities. A feature of the work is its presentation of the friendship between Lavoisier and the du Pont family, the same family that founded the great chemical industry in America that bears its name.

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ECONOMICS

STATISTICAL ACTIVITIES OF THE AMERICAN NATIONS, 1940—Elizabeth Phelps—*Inter American Statistical Institute*, 842 p., \$2. A compendium of the statistical services in 22 nations of the Western Hemisphere, together with information concerning statistical personnel; edited under the direction of the Temporary Organizing Committee of the Inter American Statistical Institute.

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SOCIOLOGY—ENGINEERING

ENGINEERING PROGRESS AND THE SOCIAL ORDER—Frank B. Jewett and Robert W. King—*Univ. of Penn. Press*, 15 p., 25c. A contribution to the University of Pennsylvania's Bicentennial Conference.

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POLITICAL SCIENCE

UNITED STATES' COOPERATION WITH BRITISH NATIONS—*National Planning Assn.*, 51 p., 25c. This pamphlet not only considers the many fields in which Britain and the United States are now cooperating but takes a long look forward and considers the prospects for future collaboration after the war.

Science News Letter, October 25, 1941

GEOLOGY

GEOLOGY, 1888-1938; Fiftieth Anniversary Volume—*Geological Society of America*, 578 p., paper, \$1.; buckram, \$3. The years covered by the half-century of the Geological Society of America have been epochal in the science. They saw the full development and consolidation of the revolution in geological concepts and methods of the half-century that had preceded it. This memorial volume takes in the whole great panorama of earth-science as it has developed in these five decades, and as it stands today looking toward the future.

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